

WHAT IS CLAIMED IS:

1 1. An isolated nucleic acid encoding an SSG polypeptide, said
2 polypeptide comprising an amino acid sequence that is at least about 70% identical to an
3 amino acid sequence as set forth in SEQ ID NO:1 or 3.

1 2. The nucleic acid of claim 1, wherein said polypeptide specifically
2 binds to polyclonal antibodies generated against a polypeptide that comprises an amino
3 acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ
4 ID NO:5 and SEQ ID NO:6.

1 3. The nucleic acid of claim 1, wherein said polypeptide comprises an
2 amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3,
3 SEQ ID NO:5 and SEQ ID NO:6.

1 4. The nucleic acid of claim 1, wherein said polypeptide forms a
2 dimer with a second ABC polypeptide, and wherein said dimer exhibits sterol transport
3 activity.

1 5. The nucleic acid of claim 4, wherein said dimer is a heterodimer.

1 6. The nucleic acid of claim 4, wherein said sterol is cholesterol.

1 7. The nucleic acid of claim 5, wherein said second ABC polypeptide
2 is ABC8.

1 8. The nucleic acid of claim 1, wherein said nucleic acid hybridizes
2 under moderately stringent hybridization conditions to a nucleic acid comprising a
3 nucleotide sequence as set forth in SEQ ID NO:2 or 4.

1 9. The nucleic acid of claim 8, wherein said nucleic acid hybridizes
2 under stringent hybridization conditions to a nucleic acid comprising a nucleotide
3 sequence as set forth in SEQ ID NO:2 or 4.

1 10. The nucleic acid of claim 1, wherein said nucleic acid comprises a
2 nucleotide sequence at least about 70% identical to a sequence as set forth in SEQ ID
3 NO:2 or 4.

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- 1 11. The nucleic acid of claim 1, wherein said nucleic acid comprises a
2 nucleotide sequence as set forth in SEQ ID NO:2 or 4.
- 1 12. The nucleic acid of claim 1, wherein said nucleic acid is greater
2 than 502 nucleotides in length.
- 1 13. The nucleic acid of claim 1, wherein said nucleic acid is from a
2 mouse or a human.
- 1 14. The nucleic acid of claim 1, wherein said nucleic acid is expressed
2 in the intestine or in the liver in the presence of an LXR agonist.
- 1 15. The nucleic acid of claim 1, wherein said nucleic acid is expressed
2 in a tissue selected from the group consisting of liver, jejunum, ileum, and duodenum.
- 1 16. An isolated nucleic acid encoding an SSG polypeptide, said
2 polypeptide comprising an amino acid sequence selected from the group consisting of
3 SEQ ID NO:5 and SEQ ID NO:6.
- 1 17. An expression cassette comprising the nucleic acid of claim 1
2 operably linked to a promoter.
- 1 18. An isolated cell comprising the expression cassette of claim 17.
- 1 19. An isolated SSG polypeptide, said polypeptide comprising an
2 amino acid sequence that is at least about 70% identical to an amino acid sequence as set
3 forth in SEQ ID NO:1 or 3.
- 1 20. The isolated polypeptide of claim 19, wherein said polypeptide
2 selectively binds to polyclonal antibodies generated against a polypeptide comprising an
3 amino acid sequence as set forth in SEQ ID NO:1 or 3.
- 1 21. The isolated polypeptide of claim 19, wherein said polypeptide
2 comprises an amino acid sequence as set forth in SEQ ID NO:1 or 3.
- 1 22. The isolated polypeptide of claim 19, wherein said polypeptide
2 forms a dimer with a second ABC polypeptide, and wherein said dimer exhibits sterol
3 transport activity.

- 1 23. The isolated polypeptide of claim 22, wherein said dimer is a
2 heterodimer.
- 1 24. The isolated polypeptide of claim 23, wherein said second ABC
2 polypeptide is ABC8.
- 1 25. The isolated polypeptide of claim 22, wherein said sterol is
2 cholesterol.
- 1 26. The isolated polypeptide of claim 19, wherein said polypeptide is
2 expressed in the intestine or in the liver in the presence of an LXR agonist.
- 1 27. The isolated polypeptide of claim 19, wherein said polypeptide is
2 expressed in a tissue selected from the group consisting of the liver, jejunum, ileum, and
3 duodenum.
- 1 28. The isolated polypeptide of claim 19, wherein said polypeptide is
2 from a mouse or a human.
- 1 29. An antibody generated against the isolated polypeptide of claim 19.
- 1 30. An isolated SSG polypeptide, said polypeptide comprising an
2 amino acid sequence selected from the group consisting of SEQ ID NO:5 and SEQ ID
3 NO:6.
- 1 31. A method of making an SSG polypeptide, the method comprising:
2 (i) introducing a nucleic acid of claim 1 into a host cell or cellular extract;
3 and
4 (ii) incubating said host cell or cellular extract under conditions such that
5 said SSG polypeptide is expressed in the host cell or cellular extract.
- 1 32. The method of claim 31, further comprising recovering the SSG
2 polypeptide from the host cell or cellular extract.
- 1 33. A method of identifying a compound useful in the treatment or
2 prevention of a sterol-related disorder, said method comprising contacting an SSG
3 polypeptide with a test agent, and determining the functional effect of said test agent upon

4 said polypeptide, wherein a functional effect exerted on said polypeptide by said test
5 agent indicates that said test agent is a compound useful in the treatment or prevention of
6 said sterol-related disorder.

1 34. The method of claim 33, wherein said sterol is cholesterol.

1 35. The method of claim 33, wherein said polypeptide comprises an
2 amino acid sequence that is at least about 70% identical to an amino acid sequence as set
3 forth in SEQ ID NO:1 or 3.

1 36. The method of claim 33, wherein said polypeptide is present in a
2 cell or cell membrane.

1 37. The method of claim 33, wherein said polypeptide is bound to a
2 heterologous ABC polypeptide, forming a heterodimer.

1 38. The method of claim 33, wherein said functional effect comprises
2 an increase in the sterol transport activity of said polypeptide.

1 39. The method of claim 33, wherein said functional effect comprises a
2 physical interaction between said test agent and said polypeptide.

1 40. The method of claim 39, wherein said physical interaction is
2 detected using a direct binding assay.

1 41. The method of claim 33, wherein said sterol-related disorder is
2 sitosterolemia.

1 42. The method of claim 33, wherein said sterol-related disorder is
2 selected from the group consisting of hypercholesterolemia, hyperlipidemia, gall stones,
3 HDL deficiency, atherosclerosis, and nutritional deficiencies.

1 43. A method of identifying a compound useful in the treatment or
2 prevention of a sterol-related disorder, said method comprising contacting with a test
3 agent a cell that expresses or is capable of expressing an SSG polypeptide, and
4 determining the functional effect of said test agent upon said cell;

5 wherein a functional effect exerted on said cell by said test agent indicates
6 that said test agent is a compound useful in the treatment or prevention of said sterol-
7 related disorder.

1 44. The method of claim 43, wherein said sterol is cholesterol.

1 45. The method of claim 43, wherein said SSG polypeptide comprises
2 an amino acid sequence that is at least about 70% identical to an amino acid sequence as
3 set forth in SEQ ID NO:1 or 3.

1 46. The method of claim 43, wherein said compound produces an
2 increase in the expression of an SSG gene that encodes said SSG polypeptide.

1 47. The method of claim 46, wherein said increase in the expression of
2 said SSG gene is detected by detecting the level of SSG mRNA in said cell.

1 48. The method of claim 46, wherein said increase in the expression of
2 said SSG gene is detected by detecting the level of SSG polypeptide in said cell.

1 49. The method of claim 46, wherein said increase in the expression of
2 said SSG gene is detected by detecting the level of SSG protein activity in said cell.

1 50. The method of claim 43, wherein said compound modulates the
2 level of sterol transport activity in said cell.

1 51. The method of claim 50, wherein said sterol transport activity in
2 said cell is detected by detecting the rate of sterol efflux in said cell.

1 52. The method of claim 51, wherein said sterol is cholesterol.

1 53. The method of claim 46, wherein said increase in the expression of
2 said SSG gene is mediated by LXR or RXR.

1 54. The method of claim 43, wherein said sterol-related disorder is
2 sitosterolemia.

1 55. The method of claim 43, wherein said sterol-related disorder is
2 selected from the group consisting of hypercholesterolemia, hyperlipidemia, gall stones,
3 HDL deficiency, atherosclerosis, and nutritional deficiencies.

1 56. A method of treating or preventing a sterol-related disorder in a
2 mammal, said method comprising administering to said mammal a compound that
3 increases the level of expression or activity of an SSG polypeptide in a plurality of cells
4 of said mammal.

1 57. The method of claim 56, wherein said sterol is cholesterol.

1 58. The method of claim 56, wherein said sterol-related disorder is
2 sitosterolemia.

1 59. The method of claim 56, wherein said sterol-related disorder is
2 selected from the group consisting of hypercholesterolemia, hyperlipidemia, gall stones,
3 HDL deficiency, atherosclerosis, and nutritional deficiencies.

1 60. The method of claim 56, wherein said compound produces a
2 decrease in the amount of dietary sterol that is absorbed in said mammal.

1 61. The method of claim 56, wherein said compound produces a
2 decrease in the amount of sterol that is retained in the liver of said mammal.

1 62. The method of claim 56, wherein said compound is identified using
2 the method of claim 33 or 43.

1 63. The method of claim 56, wherein said compound causes an
2 increase in LXR or RXR activity within cells of said mammal.

1 64. A method of prescreening to identify a candidate therapeutic agent
2 that modulates SSG activity in a mammal, the method comprising:
3 providing a cell which comprises an SSG polypeptide; and
4 a test compound; and
5 determining whether the amount of sterol transport activity in said cell is
6 increased or decreased in the presence of the test compound relative to the activity in the
7 absence of the test compound;
8 wherein a test compound that causes an increase or decrease in the amount
9 of sterol transport activity is a candidate therapeutic agent for modulation of SSG activity
10 in a mammal.

1 65. The method of claim 64, further comprising a secondary step,
2 wherein said test compound is administered to a mammal, and the absorption of dietary
3 sterol in said mammal is detected.

1 66. A method of inducing the expression of an ABC gene in a
2 mammalian cell, said method comprising increasing the level of LXR or RXR activity in
3 said cell.

1 67. The method of claim 66, wherein said ABC gene encodes a protein
2 that is involved in the transport of a sterol.

1 68. The method of claim 67, wherein said ABC gene is selected from
2 the group consisting of SSG, ABC1 and ABC8.

1 69. The method of claim 67, wherein said sterol is cholesterol.

1 70. The method of claim 66, wherein said LXR or RXR activity is
2 increased by administering an LXR or RXR agonist to said cell.

1 71. The method of claim 66, wherein said cell is present in a mammal.

1 72. The method of claim 66, wherein said cell is a liver, intestinal, or
2 kidney cell.

1 73. An isolated nucleic acid comprising at least one nucleotide
2 sequence selected from the group consisting of exon 1 (SEQ ID NO:7), exon 2 (SEQ ID
3 NO:8), exon 3 (SEQ ID NO:9), exon 4 (SEQ ID NO:10), exon 5 (SEQ ID NO:11), exon 6
4 (SEQ ID NO:12), exon 7 (SEQ ID NO:13), exon 8 (SEQ ID NO:14), exon 9 (SEQ ID
5 NO:15), exon 10 (SEQ ID NO:16), exon 11 (SEQ ID NO:17), exon 12 (SEQ ID NO:18)
6 and exon 13 (SEQ ID NO:19).

1 74. The isolated nucleic acid sequence of claim 73, further comprising
2 at least one intron.